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<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  (use as many sheets as necessary)				Application Number	10/066,456
				Filing Date	1/31/02
				First Named Inventor	Steven Teig, et al.
				Group Art Unit	2825
				Examiner Name	B. Tat
Sheet	1	of	2	Attorney Docket Number	SPLX.P0099

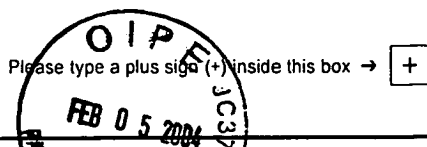
U.S. PATENT DOCUMENTS						
Examiner* Initials	Cite No. <sup>1</sup>	U.S. Patent Document		Date of Publication MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number	Kind Code <sup>2</sup> (if known)			
	1.	2002/0157063	A1	10-24-2002	Besson	
	2.	2002/0178432	A1	11-28-2002	Kim et al.	
	3.	2003/0145288	A1	07-31-2003	Wang et al.	
	4.	4,703,435		10-27-1987	Darringer et al.	
	5.	5,003,487		03-26-1991	Drumm et al.	
	6.	5,537,330		07-16-1996	Damiano et al.	
	7.	5,892,678		04-06-1999	Tokunoh et al.	
	8.	5,903,466		05-11-1999	Beausang et al.	
	9.	5,991,524		11-23-1999	Belkhale et al.	
	10.	6,080,204		06-27-2000	Mendel	
	11.	6,311,317	B1	10-30-2001	Khoche et al.	
	12.	6,389,586	B1	05-14-2002	McElvain	
	13.	6,397,170	B1	05-28-2002	Dean et al.	
	14.	6,421,818	B1	07-16-2002	Dupenloup et al.	
	15.	6,446,240	B1	09-03-2002	Iyer et al.	
	16.	6,453,447	B1	09-17-2002	Gardner et al.	
	17.	6,470,486	B1	10-22-2002	Knapp	
	18.	6,519,754	B1	02-11-2003	McElvain et al.	
	19.	6,519,609	B1	02-11-2003	Touzet	
	20.	6,539,536	B1	03-25-2003	Singh et al.	
	21.	6,543,037	B1	04-01-2003	Limquenco et al.	

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				<b>Examiner Name</b>	B. Tat
<b>Sheet</b>	2	of	2	<b>Attorney Docket Number</b>	SPLX.P0099

U.S. PATENT DOCUMENTS					
22.	6,546,541	B1	04-08-2003	Petranovic et al.	
23.	6,618,835	B1	09-09-2003	Garlapati et al.	

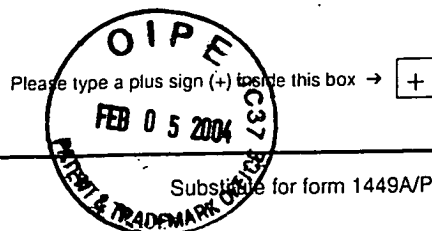
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	24.	NN78055443, "Automatic Remap", IBM Technical Disclosure Bulletin, Vol. 20, No. 12, May 1978, pp. 5443-5445 (5 pages).			
	25.	NN9411291, "Design of Portable Library using Parameterized Cells", IBM Technical Disclosure Bulletin, Vol. 37, No. 11, pp. 291-292 (4 pages).			
	26.	Markovic et al., "FPGA to ASIC Conversion Design Methodology with the Support for Fast Retargeting to Different CMOS Implementation Technologies", Proceedings of 2002 22 <sup>nd</sup> International Conference on Microelectronics, Vol. 2, 14 May 2000, pp. 703-706.			
	27.	Ruiz et al., "Design and Prototyping of DSP Custom Circuits Based on a Library of Arithmetic Components", Vol. 1, 9 November 1997, pp. 191-196.			
	28.	Tamiya, Y., "Delay Estimation for Technology Independent Synthesis", 1997 Proceedings of the ASP-DAC '97, Asia and South Pacific Design Automation Conference, 28 January 1997, pp. 31-36.			

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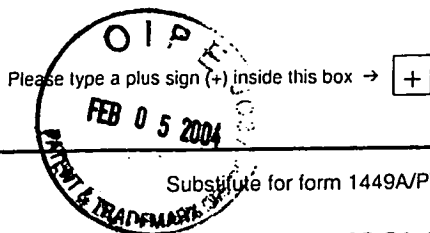
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	1.	5,311,442		05-10-1994	Fukushima	
	2.	5,519,630		05-21-1996	Nishiyama et al.	
	3.	5,521,835		05-28-1996	Trimberger	
	4.	5,537,341		07-16-1996	Rose et al.	
	5.	5,610,829		03-11-1997	Trimberger	
	6.	5,696,974		12-09-1997	Agrawal et al.	
	7.	5,752,000		05-12-1998	McGeer et al	
	8.	5,574,441		05-19-1998	Tokunoh et al.	
	9.	5,787,010		07-28-1998	Schaefer et al.	
	10.	6,023,566		02-08-2000	Belkhale et al.	
	11.	6,035,107		03-07-2000	Kuehlmann et al.	
	12.	6,086,626		07-11-2000	Jain et al	
	13.	6,102,964		08-15-2000	Tse et al.	
	14.	6,301,696		11-09-2001	Lien et al.	
	15.	6,334,205	B1	12-25-2001	Iyer et al.	
	16.	6,336,208		01-01-2002	Mohan et al	
	17.	6,470,478	B1	10-22-2002	Bargh et al.	
	18.	6,473,884		10-29-2002	Ganai et al	
	19.	6,496,972	B1	12-17-2002	Segal	
	20.	6,523,156	B2	02-18-2003	Cirit	
	21.	6,574,779	B2	06-03-2003	Allen et al.	

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NON PATENT LITERATURE DOCUMENTS				
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	22.	Crastes, M. et al., A technology Mapping Method Based on Perfect and Semi-Perfect Matchings, Design Automation Conference, 1991, 28 <sup>th</sup> ACM/IEEE, June 17-21, 1991, pp. 93-98.		
	23.	Devadas, S. et al., Synthesis and Optimization for Robustly Delay-fault Testable Combinational Logic Circuits, Design Automation Conference, 1990, 27 <sup>th</sup> ACM/IEEE, June 24-28, 1990, pp.221-227.		
	24.	Yi, J. H. et al., Technology Mapping for Storage Elements Based on BDD matching, Proceedings of the 40 <sup>th</sup> Midwest Symposium on Circuits and Systems, pp. 1099-1102, vol.2, August 1997.		

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STATEMENT BY APPLICANT**

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Group Art Unit

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Examiner Name

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**RELATED U.S. PATENT APPLICATIONS**

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	1.	10/062,017	Steven Teig & Asmus Hetzel	01-31-02	
	2.	10/061,459	Steven Teig & Asmuz Hetzel	01-31-02	
	3.	10/062,014	Steven Teig & Asmus Hetzel	01-31-02	
	4.	10/062,044	Steven Teig & Asmuz Hetzel	01-31-02	
	5.	10/066,264	Steven Teig & Asmus Hetzel	01-31-02	
	6.	10/066,188	Steven Teig & Asmus Hetzel	01-31-02	
	7.	10/062,992	Steven Teig & Asmuz Hetzel	01-31-02	
	8.	10/061,474	Steven Teig & Asmus Hetzel	01-31-02	
	9.	10/061,719	Steven Teig & Asmus Hetzel	01-31-02	
	10.	10/062,993	Steven Teig & Asmus Hetzel	01-31-02	
	11.	10/062,047	Steven Teig & Asmuz Hetzel	01-31-02	

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	12.	5,649,165		Jain et al.	07-15-97	
	13.	6,301,687	B1	Jain et al.	10-09-01	

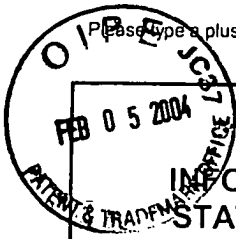
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### OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS

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	14.	D. Jongeneel, R. Otten, Y. Watanabe and R. K. Brayton, Area and Search Space Control for Technology Mapping, 37 <sup>th</sup> Design Automation Conference, 86-91, 2000.	
	15.	Henrik Reif Andersen, An Introduction to Binary Decision Diagrams, October 1997 (minor revisions April 1998), 36 pp.	
	16.	Jerry Burch and David Long, Efficient Boolean Function Matching, Proc. ICCAD 1992, 408-411.	
	17.	John Fishburn, A Depth-Decreasing Heuristic for Combinational Logic; or How to Convert Ripple-Carry Adder into a Carry-Lookahead Adder or Anything In-Between, Proceedings of the 27 <sup>th</sup> Design Automation Conference, 361-364, 1990.	
	18.	Kamal Chaudhary and Massoud Pedram, A Near Optimal Algorithm for Technology Mapping Minimizing Area under Delay Constraints, Proceedings of the 29 <sup>th</sup> Design Automation Conference, 492-498, 1992.	
	19.	Kurt Keutzer, DAGON: Technology Binding and Local Optimization by DAG Matching, Proceedings of the 24 <sup>th</sup> Design Automation Conference, 341-347, 1987	
	20.	Randal Bryant, Symbolic Boolean Manipulation with Ordered Binary Decision Diagrams, CMU CS Tech Report CMU-CS-92-160.	
	21.	Uwe Hinsberger and Reiner Kolla, Boolean Matching for Large Libraries, Proceedings of the 35 <sup>th</sup> Design Automation Conference, 206-211, June 1998.	
	22.	Yuji Kukimoto, Robert K. Brayton, and Prashant Sawkar. Delay-Optimal Technology Mapping by DAG Covering, Dept. of Electrical Engineering and Computer Science, University of California, Berkeley, Strategic CAD Laboratories, Intel Corp., October 1997.	
	23.	Zbigniew J. Czech, et al., An Optimal Algorithm for Generating Minimal Perfect Hashing Functions, Information Processing Letters, 43(5); 257-264, October 1992	

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